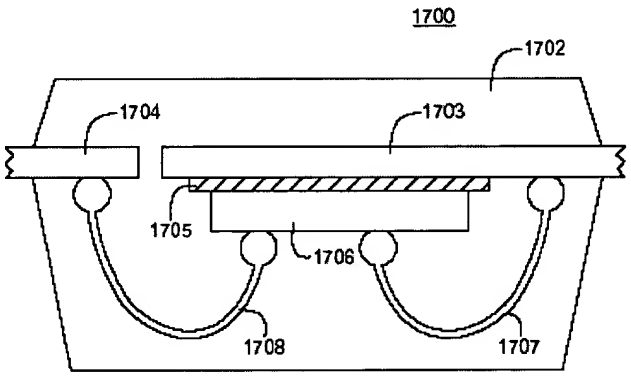
REMARKS/ARGUMENTS

Claims 1-2 and 4-7 remain pending. Claim 1 is amended by the instant response.

Embodiments in accordance with the present invention relate to packages exhibiting a reduced vertical profile.

The vertical profile of the package may be reduced utilizing a number of approaches. As shown in Figure 17, one technique positions the die (1706) on the underside of the lead frame (1703), with a bond wire (1708) extending from the lower surface of the die to contact the underside of the lead (1704):



Claim 1 has now been amended to describe this aspect:

1. (Currently Amended) A small footprint semiconductor device package comprising:

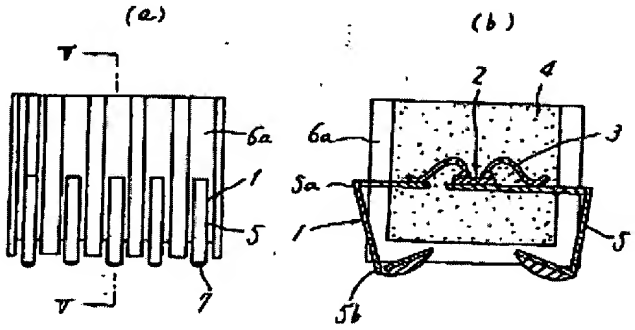
. . . a second lead nonintegral with the second side of the diepad and in electrical communication with the die through a bondwire, the second lead including an enclosed portion by the package body and in electrical communication with the die, and an exposed portion of the second lead extending from the side of the package body, folding back along the side of the package toward the bottom of the package at a first angle, and folding underneath the package bottom toward a center of the bottom of the package to form a second lead foot having a reverse gull wing shape, whereupon the portion of the second lead along the side of the package and the portion of the lead along the bottom of the package form an angle of less than 90° from each other and the second lead foot being inclined at a second angle relative to an underlying planar PC board to promote solder wetting, wherein a first side of the die is in contact with the first side of the diepad proximate to the first and second lead feet, and wherein a first end of the bondwire is in contact with a side of the enclosed lead portion

proximate to the first and second lead feet, and a second end of the bondwire is in contact with a second side of the die proximate to the first and second lead feet.

In the latest office action mailed January 10, 2005, the Examiner rejected the pending claims as obvious based upon Japanese patent no. JP359161851A to Yoshida ("the Yoshida patent") in combination with U.S. patent no. 5,616,953 to King et al. ("the King patent"). These claim rejections are traversed as follows.

In order to establish a prima facie case of obviousness, the combined prior art references must teach or suggest all of the claim limitations. (MPEP 2143). Here, there is no teaching or suggestion in either the Yoshida or King patents, taken alone or in combination, regarding a package having a bond wire ends contacting an underside portion of a non-integral lead and a lower surface of a die positioned under a diepad.

A full English language translation of the Yoshida patent has previously been provided. Figures 5(a)-(b) of the Yoshida patent illustrate a package (4) having side grooves (6a) continuous with bottom grooves (6b - referenced but not labeled) running along the entire width of the package at the location of the leads (5) (See page 4, lines 30-31).



Significantly, the Yoshida patent differs from the claimed embodiment by showing both semiconductor pellet (2) and wires (3) positioned on the upper surface of the supporting lead frame (1), away from the lead feet. Such an orientation that would have the effect of increasing the vertical profile of the package, by requiring material to fully encapsulate the upwardly-projecting bond wires. Indeed, the thickness of the portion of the package extending above the lead frame in Figures 5(a)-(b) of the Yoshida patent, is approximately the same as the thickness of the remainder of the package.

The Yoshida patent thus contains no teaching, or even suggestion, to position the die on the underside of the leadframe proximate to the lead feet, as is now described in the pending claims.

In an attempt to provide such a teaching, the Examiner has combined the Yoshida patent with U.S. patent no. 5,616,953 to King et al. ("the King patent"). Specifically, the Examiner has asserted that arrangement of the die on top of a lead frame as shown in Figures 5(a)-(b) of the Yoshida patent, is substantially equivalent to arrangement of a lead on top of the die as shown in Figure 5 of the King patent. (Office Action Mailed January 10, 2005, page 3, lines 13-14).

Figure 5 of the King patent is reproduced below.

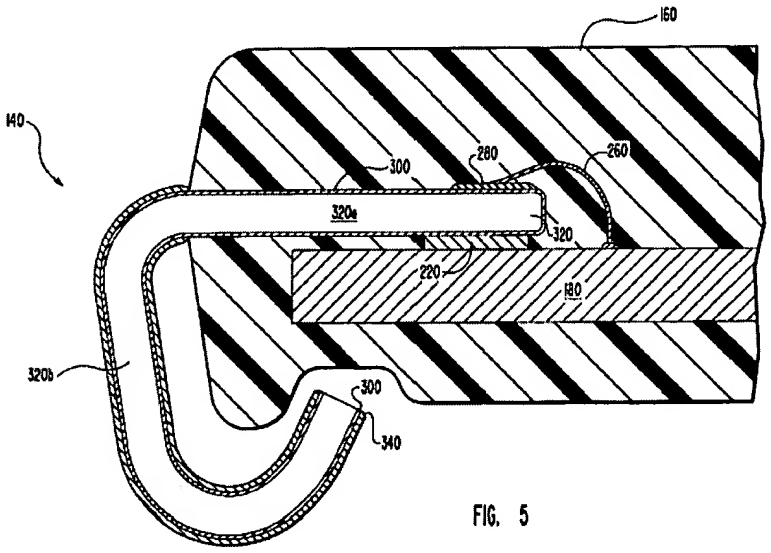
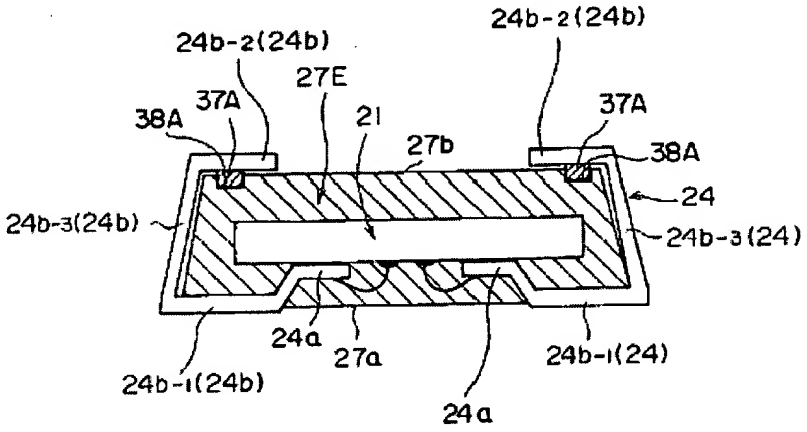


FIG. 5

In this Figure 5, ends of bond wire (260) contact an upper surface of the die (180) and an upper surface of the lead (320a), respectively. Such an arrangement would again serve to enhance the vertical profile of the package, as material is required to encapsulate the bond wire projecting upward over both the die and the lead. Thus like the Yoshida patent, the thickness of the package extending over the lead in Figure 5 of the King patent, is about the same as the thickness of the remainder of the package. The King patent thus also fails to teach or even suggest an arrangement wherein ends of a bondwire contact a lead and die underside.

Such a teaching is also conspicuously lacking from other patents relied upon by the Examiner to reject certain of the dependent claims. For example, U.S. patent no. 6,433,418 to

Fujisawa et al. ("the Fujisawa patent"), describes a package having (1) a die supported by leads rather than a diepad, and (2) the feet of the leads positioned on top of the package.

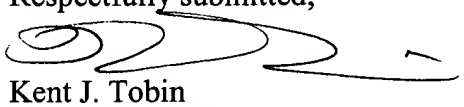


The Fujisawa patent thus fails teach or suggest bond wires contacting surfaces of the die and lead proximate to the lead feet, as is now recited by the pending claims.

Based upon the failure of the art relied upon by the Examiner to teach every element of the pending claims, it is respectfully asserted that these claims are not obvious in light of the Yoshida and King patents. The present claim rejections are improper and should be withdrawn.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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